

**Domestic electric appliance control**

**Publication number:** DE19832757  
**Publication date:** 1999-06-17  
**Inventor:** LEIKAM JUERGEN (DE); MADLOCH VOLKER (DE);  
KUEMMEL EGON (DE); TUREK RICHARD (DE)  
**Applicant:** AEG HAUSGERAETE GMBH (DE)  
**Classification:**  
- **international:** A47L15/42; D06F39/00; F24C7/08; A47L15/42;  
D06F39/00; F24C7/08; (IPC1-7): F24C7/08; A47L15/42;  
A47L15/46; D06F33/02; F24C15/00; G09F9/30  
- **european:** A47L15/42S; D06F39/00P; F24C7/08B  
**Application number:** DE19981032757 19980721  
**Priority number(s):** DE19981032757 19980721; DE19971031511 19970722;  
DE19981061219 19980721

**Report a data error here**

**Abstract of DE19832757**

To control the operation of an electric domestic appliance, the appliance is started with a selected operating function taken from stored program parameters. The actual program parameter in force is displayed (1), for a given time period, and the operating panel (60) for input is activated for the program parameter to be modified.

---

Data supplied from the esp@cenet database - Worldwide

A method for controlling a cooking device, washing machine or dishwasher and a cooking device, washing machine or dishwasher with graphic display device

In order to control a cooking device, washing machine or dishwasher which comprises a graphic display device, at least one input operating element which is assigned to the display device and at least two function operating elements to select cooking, washing or dishwashing functions of the cooking device or washing machine or dishwasher respectively, after a cooking or washing or dishwashing function has been selected by actuating one of the function operating elements

a) a cooking, washing or dishwashing program with stored program parameters and which belongs to the selected cooking, washing or dishwashing function is started, and simultaneously

b) at least for a pre-determined period of time, the current program parameters of the cooking, washing or dishwashing program are displayed on one display field of the display device respectively, and the input operating element or elements is or are activated in such a manner that at least one of the program parameters can be altered by actuating at least one of the input operating elements which are assigned to the corresponding display field.

## Description

The invention relates to a method for controlling a cooking device, washing machine or dishwasher and a cooking device, washing machine and dishwasher.

According to the prior art, those functions (cooking functions, operating modes) which can be selected with cooking devices (cooking ranges, hobs, microwave ovens or baking and roasting ovens) are shown on the operating elements or the operating screen. The display is usually engraved and/or imprinted.

In order to render the display of the functions which can be selected with the operating elements independent from the local language of the target market and to avoid the resulting additional equipment of cooking ranges with country-specific operating elements or screens, the functions which can be selected are now indicated by symbols which are universally comprehensible.

Today, modern process computer technology makes it possible to realise a plurality of new functions at no significant additional cost. Thus, depending on requirements, different types of heating such as top heat and base heat, hot air and grill, can be operated individually or in combination with each other. The individual operating modes can furthermore be subjected to different specified time programs.

The plurality of the functions thus made possible leads to a certain lack of clarity when they are identified using symbols on the operating screens of cooking devices. Furthermore, a plurality of operating elements is necessary. The same problems occur with washing machines and dishwashers.

Menu navigations for operating devices are now known in many specialist technical areas, with which in a program controlled manner, on certain display fields of a graphic, i.e. pixel-oriented display systems such as a screen of a cathode ray monitor, a liquid crystal (LCD) screen, a light diode (LED) screen or a vacuum fluorescence screen (VFD), selectable

commands or functions are displayed, and are selected either by actuating (pressing) the display fields themselves (touch screen) or by using buttons or touch sensors (piezoelectric, capacitive, optical) which are arranged next to the display fields.

Such menu navigations are used for example with computers, TV devices, CD players or cash machines.

A control unit for the devices used in a fitted kitchen, including a fitted hob and fitted baking and roasting oven, with a graphic screen and operating elements arranged alongside the screen in order to set functions via menu navigation, is known from EP-A-0 740 112.

In practise, however, it has not been possible to establish such menu navigations with cooking devices to date, firstly due to the costs, and secondly due to the unfamiliar and more time-consuming operation compared to existing operating systems. One example here is a situation in which food is being prepared, when quick action is required, and the difficulty of reacting quickly using menu navigation in comparison with a standard rotating knob which can be turned to the required position quickly.

The object of the invention is therefore to rectify the disadvantages of the prior art.

This object is attained by means of a method for controlling a cooking device with the features described in patent claim 1, and a cooking device with the features described in patent claim 11, a washing machine with the features described in patent claim 23, and a dishwasher with the features described in patent claim 31.

The invention is based on the concept of using for a cooking device, washing machine or dishwasher a graphic, i.e. pixel-oriented, display device and several operating elements which are assigned to said display device, and to offer on individual display areas of said display device, which are assigned or which can be assigned to the operating elements, a selection (a menu) of different functions and subfunctions of the device (menu navigation). The function configuration of the operating elements and their corresponding label on the display device

are thus stored in the control program, and can therefore, in contrast to the prior art, be changed at any time by the user, or by using a new memory record. Due to the variable function configuration, the device can be operated with few operating elements, and with a clear arrangement. The operation by means of a program-controlled operating interface, from the selection menu of which one function respectively is selected via the operating elements, enables a plurality of new operating possibilities. By means of the graphic display device, it is now possible for example to display the specified function configuration in a simple and cost-efficient manner, using the relevant terms in the respective local language. In order to convert the terms into another local language, only the program software must be changed (if appropriate, freely selectable for the user).

The method according to patent claim 1 for controlling a cooking device, washing machine or dishwasher which comprises a graphic display device, at least one input operating element which is assigned to the display device, and at least two function operating elements for selecting functions of the device which are assigned respectively, comprises the method stages: following the selection of a cooking, washing or dishwashing function by actuating one of the function operating elements

- a) a cooking, washing or dishwashing program with stored program parameters, which belongs to the selected cooking, washing or dishwashing function, is if appropriate automatically started after a pre-determined time period has expired, and simultaneously
- b) at least for a pre-determined time period, the current program parameters of the running cooking, washing or dishwashing program are displayed on one display field respectively of the display device, and the input operating element(s) are activated in such a manner that at least one of the program parameters can be changed by actuating at least one of the input operating elements which is assigned to the corresponding display field.

The cooking device according to patent claim 11, the washing machine according to patent claim 23 or the dishwasher according to patent claim 31 comprises accordingly

- a) a graphic display device
- b) at least one input operating element which is assigned to the display device
- c) at least two function operating elements for selecting operating functions (cooking, washing or dishwashing functions) which have been assigned respectively, and
- d) a control device which is connected to the display device and the input or function operating elements, which according to a control program, after an operating function is selected by actuating one of the function operating elements

d1) an operating program with stored program parameters which belongs to the selected operating function is started

and at the same time

d2) at least for a pre-determined time period, the display device is prompted to display the current program parameters of the operating program on one display field respectively of the display device, and

d3) the input operating element(s) are activated in such a manner that by actuating at least one of the input operating elements which are assigned to the corresponding display field, at least one of the program parameters can be changed.

The subjects of patent claims 1, 11, 23 and 31 are based on the further concept that a pure menu navigation via a graphic screen with a cooking device, washing machine or dishwasher is somewhat time consuming due to the several decision stages which are frequently required, particularly for unpractised users, until the desired cooking, washing or dishwashing function (operating mode) is set. In order to solve this problem, a type of hybrid operation is recommended, in which by simply actuating the function operating elements as with conventional devices, the device is set in operation with a pre-set operating program, and the user, when they require it, can still adapt or change the program parameters (operating parameters) of the operating program when the operating program is already running via the input operating elements and the graphic display. This operating system therefore permits both simple operation by simply actuating the "normal" function operating elements in order

to start a pre-set operating procedure (generally after actuation of a main switch for switching the device on or off), wherein for unpractised users, no confusion can arise due to altering functions of the function operating elements, and for practised users, an adaptation of the program parameters of an operating program to suit individual requirements by means of a menu navigation which is highly suitable for the purpose, and which can be designed for any language.

Advantageous further embodiments and designs of the method and of the cooking device, washing machine or dishwasher according to the invention are described in the subclaims which are dependent on patent claims 1, 11, 23 or 31 respectively.

In general, a cooking device with a heating system is equipped with different heating types as program parameters. Now, in an advantageous embodiment, at least with a portion of the cooking functions, after said cooking function is selected within a specified time interval before the cooking program is started, heating modes of the heating system of the cooking device which belong to the selected cooking function can initially be selected, and the cooking program is started with the heating mode which has been selected within the time interval or, if no selection has been made, with a pre-set heating mode which belongs to the selected cooking function. Preferably, for this purpose, the selectable and in general also the pre-set heating modes of the heating system of the cooking device are displayed on one display field respectively of the display device, and are selected respectively when one of the input operating elements or function operating elements which is assigned to the respective display field is actuated.

In an advantageous embodiment, after a change is made to a program parameter by actuating a corresponding input operating element, the operating program is immediately continued with the changed program parameter. Additionally, the changed program parameter can also be stored and adopted for future cycles of the corresponding operating program. However, it is in general also possible to incorporate the changed program parameter not during the running operating program, but only with future operating programs. Preferably, an active acknowledgement is provided for the adoption of a changed program parameter, whereby at least one of the input operating elements and the corresponding display field of the display device are activated in order to adopt the changed program parameter, and the changed

program parameter is only adopted after this or these input operating element(s) is/are actuated. In this manner, an unwanted, permanent re-setting of a program parameter can be avoided. As an alternative to this, an automatic adoption (storage) of a changed program parameter is naturally also possible without acknowledgement, even after a certain time period has expired.

Preferred program parameters of the cooking program which can be influenced and which can be displayed on the display device are parameters of the food to be cooked, such as the type of food to be cooked (meat, pastry etc.) or the weight of the food to be cooked, the cooking temperature for the temperature control and/or the cooking duration (total or remaining cooking duration).

In further embodiments of the invention, in particular when the device is switched off, a time and/or information for the user of the device, in particular operating instructions, recipes or similar, can be displayed and/or selected via at least one of the input operating elements.

Furthermore, in an additional further embodiment, an automatic, in particular pyrolytic cleaning procedure for cleaning the cooking device can be selectable (with menu navigation) in addition to the cooking functions via an additional function operating element or an input operating element.

The operating elements can advantageously be designed as buttons, e.g. membrane buttons and/or touch sensitive areas, or similar. In order to better display the function which is to be selected or which has been selected, or its activation, the function operating elements and/or input operating elements and/or the display of their function configuration can be backlit or visually indicated in a different manner.

The invention will now be explained in greater detail below with reference to exemplary embodiments and the drawings, in which the following is shown schematically:

Fig. 1 shows a cooking device in a schematic diagram



Figs. 2 to 5 show a menu navigation on a display device of a cooking device

Fig. 6 shows an initial configuration of a display device of a cooking device

Figs. 7 to 21 show different selection procedures, based on the initial configuration according to fig. 6

The cooking device shown in fig. 1 comprises an operating unit (operating screen, operating panel, operating field) 60, a control device 50 and several heating units 71, 72, 73 and 74. The heating units 71 to 74 are used to warm or heat up foodstuffs or food to be cooked, which can be arranged within a sealable cooking area not shown, as is the case with a cooking oven, or set down on an area, as is the case with a cooking hob, and are designed in the known manner for this purpose.

The operating unit 60 comprises a graphic display device (graphic screen) 1 which is designed in a rectangular or square form, for example, several function operating elements 30, 31 and 32, several input operating elements 20, 21, 22 and 23 and a switch element 4. The switch element 4 is provided to switch the cooking device on or off. The input operating elements 20 to 23 are arranged below each other and at the side on one side, for example on the right-hand side, of the display device 1, while the function operating elements 30 to 32 are by contrast arranged on the opposite, i.e. left-hand side of the display device 1, for example. As a result, each of the operating elements, in particular the input operating elements 20 to 23, can be assigned a fixed or variable display field of the display device 1 in terms of its arrangement and size.

The function operating elements 30 to 32 are provided to select one cooking function of the cooking device respectively, and for this purpose are provided with a label (e.g. a name or symbol). Each function operating element 30 to 32 can here be permanently labelled with the assigned label, e.g. by imprinting or engraving, or by assigned visual identification means (e.g. backlighting) which are also connected to the control device 50, or be identifiable with the aid of the display device 1 at least during an active phase.

The input operating elements 20 to 23 serve to select cooking subfunctions or to set or change program parameters for cooking programs. For this purpose, labels for the current cooking subfunctions which can be selected by means of the input operating elements 20 to 23, or program parameters from the control device 50, are displayed on one of the display fields respectively on the display device 1 which are assigned to the input operating elements 20 to 23, and preferably the input operating elements 20 to 23 which are activated accordingly, or which are monitored by the control device 50 for an input (actuation), are also visually emphasised by being backlit, for example.

All components of the operating unit 60, namely the display device 1, the function operating elements 30 to 32, the input operating elements 20 to 23 and the switch element 4, as well as all heating units 71 to 74, are respectively connected to the control device 50 via control or signal lines.

The control device 50 preferably comprises at least one microprocessor and a memory for storing the program parameters which have been pre-set or changed via the operating unit 60.

The function operating elements 30 to 32 and the input operating elements 20 to 23 preferably comprise sensors or buttons which are arranged behind an operating screen in such a manner that they are not visible from the front and their respective operating area on the operating screen is only visually identified, for example by means of backlighting, when the corresponding operating element 20 to 23 or 30 to 32 is activated.

In order to record a touch (actuation by pressing), in particular, piezoelectric sensors or optical sensors or capacitive sensors can be provided, but naturally also mechanical push button switches.

Fig. 2 now shows an operating unit 60 of a cooking device with a graphic display device 1. The cooking device in fig. 2 is switched off, and on the display device 1 only the time, in the example 12.30, is shown. The function operating elements and input operating elements are not visible when the cooking device is switched off.

In fig. 3, the cooking device has been switched on via a switch element (4 in fig. 1) which is not shown, and now on the left-hand side of the display device 1, four function operating elements 30 to 33 and four input operating elements 20 to 23 are visually identified respectively by arrows which point to the display device 1 on the right-hand side of the display device 1. On the display device 1, a display field is provided for each operating element which lies in the direction of the arrow, on which one function respectively is displayed which belongs to the operating elements. The function operating element 30 is assigned the cooking function "BAKE", the function operating element 32 is assigned the cooking function "GRILL" and the function operating element 33 is assigned the operating function "CLEAN". On the right-hand side of the display device 1, the input operating element 20 is assigned a function "SPECIAL", which can include special functions such as a thawing function, a boiling down function, a yoghurt or yeast dough preparation function ("Organic"), a fast food preparation function (fast warming), or the pure base heat mode, the input operating element 21 is assigned the "CLOCK" function for setting the time, the input operating element 22 is assigned a "PROGRAM" function for setting automatic cooking programs, and the input operating element 23 is assigned a "HELP" function for the user. As can be seen from fig. 3, each function is identified on the display device in clear text, i.e. with letters and words. It is naturally also possible to identify the corresponding functions using symbols. Furthermore, with corresponding programming, the words can also be shown in the respective local language on the display device 1.

Fig. 4 shows the operating unit 60 with the display device 1 in a state which results from actuation of the function operating element 30 in fig. 3, i.e. when the cooking function "BAKE" is selected. The selected cooking function "BAKE" is displayed in the upper section of the display device 1 and can be changed again (switched off) via the function operating element 30. Furthermore, three heating modes which are provided for the cooking function "BAKE" are displayed in one display field respectively on the display device 1. The heating mode which is stored in advance of the cooking function "BAKE", "SOLO HOT AIR 1 LEVEL" is identified by a frame. The two further heating modes, "MULTI HOT AIR 2 LEVELS" and "T/B HEAT" can be selected via the input operating element 22 or 23 which is identified respectively. The input operating element 21 which is assigned to the heating mode "SOLO HOT AIR 1 LEVEL" which has already been automatically selected and the further input operating element 20 and further function operating elements 31 to 33 are not visible, and are thus also not activated.

If within a pre-determined time interval, which typically ranges from 3s to 5s, none of the activated input operating elements 22 and 23 have been actuated, i.e. none of the assigned heating modes has been selected, the pre-set heating mode “SOLO HEATING 1 LEVEL” is automatically adopted as the cooking parameter, and the cooking program is started with this heating mode.

This case is shown in fig. 5. During the cooking program “BAKE” with “SOLO HEATING 1 LEVEL” which is now running, on the display device 1, the pre-set control temperature is displayed as a cooking parameter, here “180” for 180°C, which is displayed in a frame for the hot air, and next to this frame, the “plus” symbol and the “minus” symbol are displayed for changing (increasing or decreasing) the set control temperature via the activated and lit input operating elements 22 and 23. Furthermore, on the left-hand side of the display device, a function, “SPECIAL”, is displayed which is assigned to the function operating element 31, via which the special cooking parameters such as cooking food type or cooking food receptacle or cooking food weight or similar can be set. The input operating element 21 is assigned the start time (12.30 in the example) for the baking procedure, and can also be changed accordingly. Finally, a further display - not shown - of the current measured temperature (actual temperature) in the cooking device can be provided, which is particularly useful for monitoring the heating procedure and pre-heating.

A selected heating mode or selected operating parameter is identified respectively by a frame on the display device 1. The identifying words can also at least partially be replaced by symbols, such as the words “1 LEVEL” or “2 LEVELS”.

Figs. 6 to 21 now show a different concept of an operating system. While in the exemplary embodiment according to fig. 3, the cooking functions and the cleaning function are displayed on the display device 1 after the cooking device is switched on, in the initial configuration according to fig. 6, a permanent identifier is provided for each function operating element 30 to 33 respectively, which is formed by the corresponding words “BAKE” for function operating element 30, “ROAST” for function operating element 31, “GRILL” for function operating element 32, and “CLEAN” for function operating element 33. The identifiers can adopt two different lighting or colour states, in order to be able to differentiate between a state

prior to actuation and a state following actuation of the corresponding function operating element.

Fig. 6 now shows the initial state directly after the cooking device has been switched on. The function operating elements 30 to 33 respectively are lit in the same manner. The four input operating elements 20 to 23 are also visually identified (lit). On the display device 1, the display fields which are assigned to the input operating elements 20 to 23 are configured respectively with a function analogous to fig. 3.

Now in fig. 7, based on the state shown in fig. 6, the function operating element 30 has been actuated and the corresponding designation "BAKE" is now visually more strongly identified or identified by a different colour, and is therefore emphasised. At the same time, analogous to fig. 4, the pre-set heating mode is again identified by a frame and several heating modes can be selected for the "BAKE" cooking function via the input operating elements 21 to 23, wherein additionally, only base heat can be selected via the input operating element 23 "B HEAT".

Fig. 8 now corresponds, analogous to the transfer from fig. 4 to fig. 5, to an automatic selection of the heating mode "SOLO HOT AIR 1 LEVEL" after no other heating mode has been selected within a specified time period. Again, with a cooking program which has already been started in accordance with fig. 8, the hot air temperature cooking parameter can be changed via the input operating elements 22 and 23, the cooking start time can be changed via the input operating element 21, and further cooking parameters can be changed via the input operating element 20 by means of the display device 1.

Fig. 9 shows the state after actuation of the input operating element 21 in fig. 8 for selecting the "CLOCK" function. Now, the cooking duration (baking duration), can here be set via the corresponding input operating elements 20 and 21 and assigned symbols "+" and "-" in the display fields of the display device 1. Via the input operating element 22, the end of the cooking procedure can be set, and via the input operating element 23, a return can be made to the previous mode (menu level). A return function of this type can otherwise be provided at every menu level for all embodiments.

According to fig. 10, in the illustration according to fig. 9, the input operating element 22 has been actuated. Accordingly, the word "END" is displayed on the display device 1 on the upper left-hand side, and via the input operating elements 20 and 21, the end time point of the cooking, in this case, the baking, can be set and adopted via the input operating element 22.

In fig. 11, after an end time has been selected and acknowledged via the input operating element 22, the totality of the cooking parameters which have now been set can be seen on the display device 1. In the exemplary embodiment shown, the cooking duration has been specified as 10 minutes and the cooking end time has been specified as 15.40. This type of specification has the advantage that the baking procedure ends at a certain, required time point. Furthermore, the desired and selected hot air temperature is set to 150°C.

In fig. 12, based on the initial state according to fig. 6, the function operating element 31 has been actuated and thus the "ROAST" cooking function set. The corresponding indicator of the function operating element 31 is now visually emphasised accordingly over the indicators of the other function operating elements 30, 32, 33. On the display device 1, two heating modes, namely "T/B HEAT", which correspond to a shared operating mode of the top heat heating body and the base heat heating body and the operating mode "INFRAROAST", in which the radiation heat and hot air mode are set together, are displayed. The operating mode "T/B HEAT" is here the pre-stored heating mode.

According to fig. 13, the selectable operating mode "INFRAROAST" has again not been selected, analogous to fig. 8, so that the cooking device has automatically been started up with the "T/B HEAT" heating mode. The heating mode and the corresponding cooking temperature, here 200°C, are displayed on the display device 1, together with two symbols "+" and "-", which can be selected via the input operating elements 22 and 23 in order to change the roasting temperature. Accordingly, via the input operating element 21, the cooking time can again be set and via the input operating element 20, special, further cooking parameters or cooking functions can be set.

In fig. 14, based on the initial situation according to fig. 6, the "GRILL" cooking function has now been selected via the function operating element 32. Here, no different heating modes are

offered, but instead, the operating state GRILL is set without any significant time delay. Accordingly, the "GRILL" cooking function is now displayed on the display device 1 with the appropriate grilling temperature, here 300°C, and the grilling temperature can again be changed via the input operating elements 22 and 23.

When now finally in the stage according to fig. 6 the "CLEAN" function has been selected via the function operating element 33, according to fig. 15, the "CLEAN" function and the corresponding cleaning temperature 500°C are displayed on the display device 1. The cleaning temperature cannot be changed via the input operating elements, in contrast to the cooking temperature: instead, only the time at which the cleaning should be conducted can be changed, via the input operating element 21.

Fig. 16 shows a possible function configuration of the input operating elements 20 to 23 through corresponding display fields on the display device 1 when the "HELP" function is selected on the display device 1 via the input operating element 23 in the initial situation according to fig. 6. Here, pre-set cooking programs can be retrieved under the "TABLE" function. The other functions, "WHAT IF?", "INFO" and "BACK" are self-explanatory and require no further explanation.

When the "TABLE" function is selected via the input operating element 20, according to fig. 17, the input operating elements 20 to 22 are now assigned one cooking function respectively ("BAKE", "ROAST" or "GRILL"), and the last input operating element 23 is again assigned a return function to the previous menu level.

If now in fig. 17 the "BAKE" function is selected via the input operating element 20, according to fig. 18 a selection of different cooking food receptacles appears on the display device 1, namely "TINS" (cake tins) for the input operating element 20, the receptacle "SEMI-HEIGHT" for the input operating element 21 and "BAKING SHEET" (flat cooking food receptacle) for the input operating element 22.

When the "BAKING SHEET" function is selected via the input operating element in fig. 18, different stored cooking food types are now offered on the display device 1, which are usually

baked on baking sheets. The examples here are "BEE STING CAKE", "SPONGE ROLL", "BREAD", "BUTTER CAKE" and "CHRISTMAS STOLLEN CAKE".

In fig. 20, with the selection according to fig. 19, "BEE STING CAKE" has been selected via the input operating element 20 and the corresponding arrow on the display device 1. The system now shows the recommended and pre-set operating mode for baking bee sting cake on a baking sheet, namely "SOLO HOT AIR" at the third level with 150°C pre-heating and a cooking time of between 20 and 50 minutes. If this setting is adopted via the input operating element 22, the baking procedure is started for the bee sting cake, and according to fig. 21, the selected cooking food type "BEE STING CAKE", the run time of the cooking program which has already been completed (here, 5 minutes), the recommended total run time (here, 20 to 50 minutes) and the heating mode (hot air) and cooking temperature (150°C) are displayed on the display device 1. During operation, the cooking temperature can again be set or changed via the input operating elements 22 and 23, as can the time parameters via the input operating element 21 and if appropriate, further cooking parameters (via "SPECIAL").

In an advantageous embodiment, a part or all of the functions and/or subfunctions described can be defined by the manufacturer and/or the user. This enables a high degree of user friendliness.

In principle, any graphic display can be used as a display device 1, in particular a liquid crystal (LC), vacuum fluorescence (VF), plasma, TV/video or light diode screen.

In addition to cooking devices, the operating system (the operating philosophy) according to the invention is also suitable for other devices, in particular household devices, such as washing machines, dishwashers or refrigerators, wherein the specific cooking functions and operating units (heating units) specific to cooking devices must then be replaced by the specific operating functions or operating units for the devices mentioned (e.g. water inflow, heating).



## Patent claims

1. A method for controlling a cooking device, washing machine or dishwasher which comprises a graphic display device, at least one input operating element which is assigned to the display device and at least two function operating elements to select cooking, washing or dishwashing functions of the cooking device or washing machine or dishwasher respectively, in which after a cooking or washing or dishwashing function has been selected by actuating one of the function operating elements

a) a cooking, washing or dishwashing program with stored program parameters and which belongs to the selected cooking, washing or dishwashing function is started, and simultaneously

b) at least for a pre-determined period of time, the current program parameters of the cooking, washing or dishwashing program are displayed on one display field of the display device respectively, and the input operating element or elements is or are activated in such a manner that at least one of the program parameters can be altered by actuating at least one of the input operating elements which are assigned to the corresponding display field.

2. A method according to claim 1 for controlling a cooking device which comprises a heating system with different heating modes, in which at least with a portion of the cooking functions, after selecting this cooking function, for a pre-determined period of time before starting the cooking program, initially, heating modes of the heating system of the cooking device which belong to the selected cooking function can be selected, and the cooking program is started following the expiry of the pre-determined time period either with a heating mode which is pre-stored for the selected cooking function when no other heating mode has been selected within the pre-determined time period, or with the heating mode which has been selected within the pre-determined time period.

3. A method according to claim 2, in which the heating modes which can be selected for a selected cooking function, and preferably also the pre-stored heating mode, of the heating

system of the cooking device are displayed on one display field respectively on the display device, and respectively when one of the input operating elements or function operating elements which have been assigned to the respective display field are actuated.

4. A method according to any one of the preceding claims, in which after a change is made to a program parameter by actuating the corresponding input operating element, the cooking device, washing machine or dishwasher program is continued with the changed program parameter.

5. A method according to claim 4, in which the changed program parameter is stored and is adopted for the corresponding cooking, washing or dishwashing program, so that when the corresponding cooking, washing or dishwashing function is later selected, the cooking, washing or dishwashing program is conducted with the changed program parameter.

6. A method according to claim 5, in which at least one of the input operating elements and the corresponding display field of the display device are provided in order to adopt the changed program parameter, and the changed program parameter is only adopted after this or these input operating element(s) are actuated.

7. A method according to any one of the preceding claims, in which the cooking food type, cooking temperature and/or cooking duration is or are displayed on the display device as the program parameter of the cooking program.

8. A method according to any one of the preceding claims, in which in particular when the cooking device, washing machine or dishwasher is switched off, a time is displayed on the display device.

9. A method according to any one of the preceding claims, in which alongside the cooking functions, an automatic cleaning procedure for cleaning the device can also be selected.

10. A method according to any one of the preceding claims, in which information can also be selected by at least one of the input operating elements and can be displayed on the display device for the user, in particular instructions of use, recipes or similar.

11. A cooking device with

- a) a graphic display device
- b) at least one input operating element which is assigned to the display device
- c) at least two function operating elements for selecting cooking functions which have been assigned respectively, and
- d) a control device which is connected to the display device and the input or function operating elements, which according to a control program, after a cooking function is selected by actuating one of the function operating elements

d1) a cooking program with stored program parameters which belongs to the selected cooking function is started

and at the same time

d2) at least for a pre-determined time period, the display device is prompted to display the current program parameters of the cooking program on one display field respectively of the display device, and

d3) the input operating element(s) are activated in such a manner that by actuating at least one of the input operating elements which are assigned to the corresponding display field, at least one of the program parameters can be changed.

12. A cooking device according to claim 11 with a heating system with different heating modes, in which at least with a part of the cooking functions, after said cooking function has been selected, for a pre-determined time period before the cooking program is started, heating modes of the heating system of the cooking device which belong to the selected cooking

function can initially be selected, and the control device starts the cooking program with a heating mode which is pre-stored for the selected cooking function if no other heating mode has been selected within the pre-determined time period, or starts with the heating mode which has been selected within the pre-determined time period.

13. A cooking device according to claim 12, in which the control device causes the display device to display the selectable and preferably also the pre-stored heating modes of the heating system of the cooking device on one display field of the display device respectively, and in which the heating modes can be selected respectively by actuating one of the input operating elements or function operating elements which has been assigned to the respective display field.

14. A cooking device according to any one of claims 11 to 13, in which the control device continues the cooking program with the changed program parameter after a change is made to a program parameter by actuating a corresponding input operating element.

15. A cooking device according to claim 14, in which the control device stores the changed program parameter in a memory, and when the corresponding cooking program is started in the future, adopts this from the memory.

16. A cooking device according to claim 15, in which the control device activates at least one of the input operating elements and the corresponding display field of the display device for adopting the changed program parameter, and the control device only adopts the changed program parameter when this or these input operating element(s) has or have been actuated.

17. A cooking device according to any one of claims 11 to 16, in which a cooking food parameter, cooking temperature and/or cooking duration is or are provided as a program parameter of the cooking program.

18. A cooking device according to any one of claims 11 to 17, in which alongside the cooking functions, an automatic cleaning procedure for cleaning the cooking device can also be selected.

19. A cooking device according to any one of claims 11 to 18, in which information for the user of the cooking device, in particular instructions of use, recipes or similar, can also be selected via at least one of the input operating elements and displayed on the display device.

20. A cooking device according to any one of claims 11 to 19, wherein the operating elements (2) are designed as buttons and/or touch sensors or similar.

21. A cooking device according to claim 20, wherein the function operating elements and/or the input operating elements are provided with visual identification means.

22. A cooking device according to any one of claims 11 to 21, wherein the display device (1) comprises a liquid crystal screen, a light diode screen, a cathode ray monitor or a vacuum fluorescence screen.

23. A washing machine with

- a) a graphic display device
- b) at least one input operating element which is assigned to the display device
- c) at least two function operating elements for selecting washing functions which have been assigned respectively, and
- d) a control device which is connected to the display device and the input or function operating elements, which according to a control program, after a washing function is selected by actuating one of the function operating elements

d1) a washing program with stored program parameters which belongs to the selected washing function is started

and at the same time

d2) at least for a pre-determined time period, the display device is prompted to display the current program parameters of the washing program on one display field respectively of the display device, and

d3) the input operating element(s) are activated in such a manner that by actuating at least one of the input operating elements which are assigned to the corresponding display field, at least one of the program parameters can be changed.

24. A washing machine according to claim 23, in which the control device continues the washing program with the changed program parameter after a change is made to a program parameter by actuating a corresponding input operating element.

25. A washing machine according to claim 24, in which the control device stores the changed program parameter in a memory, and when the corresponding washing program is started in the future, adopts this from the memory.

26. A washing machine according to claim 25, in which the control device activates at least one of the input operating elements and the corresponding display field of the display device for adopting the changed program parameter, and the control device only adopts the changed program parameter when this or these input operating element(s) has or have been actuated.

27. A washing machine according to any one of claims 23 to 26, in which information for the user in particular instructions of use or similar, can also be selected via at least one of the input operating elements and displayed on the display device.

28. A washing machine according to any one of claims 23 to 27, wherein the operating elements (2) are designed as buttons and/or touch sensors.

29. A washing machine according to any one of claims 23 to 27, wherein the function operating elements and/or the input operating elements are provided with visual identification means.

30. A washing machine according to any one of claims 23 to 29, wherein the display device (1) comprises a liquid crystal screen, a light diode screen, a cathode ray monitor or a vacuum fluorescence screen.

31. A dishwasher with

- a) a graphic display device
- b) at least one input operating element which is assigned to the display device
- c) at least two function operating elements for selecting dishwashing functions which have been assigned respectively, and
- d) a control device which is connected to the display device and the input or function operating elements, which according to a control program, after a dishwashing function is selected by actuating one of the function operating elements

d1) a washing program with stored program parameters which belongs to the selected dishwashing function is started

and at the same time

d2) at least for a pre-determined time period, the display device is prompted to display the current program parameters of the dishwashing program on one display field respectively of the display device, and

d3) the input operating element(s) are activated in such a manner that by actuating at least one of the input operating elements which are assigned to the corresponding display field, at least one of the program parameters can be changed.

32. A dishwasher according to claim 31, in which the control device continues the dishwashing program with the changed program parameter after a change is made to a program parameter by actuating a corresponding input operating element.

33. A dishwasher according to claim 32, in which the control device stores the changed program parameter in a memory, and when the corresponding dishwashing program is started in the future, adopts this from the memory.

34. A dishwasher according to claim 33, in which the control device activates at least one of the input operating elements and the corresponding display field of the display device for adopting the changed program parameter, and the control device only adopts the changed program parameter when this or these input operating element(s) has or have been actuated.

35. A dishwasher according to any one of claims 31 to 34, in which information for the user in particular instructions of use or similar, can also be selected via at least one of the input operating elements and displayed on the display device.

36. A dishwasher according to any one of claims 31 to 35, wherein the operating elements (2) are designed as buttons and/or touch sensors or similar.

37. A dishwasher according to any one of claims 31 to 36, wherein the function operating elements and/or the input operating elements are provided with visual identification means.

38. A dishwasher according to any one of claims 31 to 37, wherein the display device (1) comprises a liquid crystal screen, a light diode screen, a cathode ray monitor or a vacuum fluorescence screen.

21 page(s) of drawings follow



Legend:

BACKEN	BAKE
SPEZIAL	SPECIAL
BRATEN	ROAST
GRILLEN	GRILL
REINIGEN	CLEAN
UHR	CLOCK
PROGRAMM	PROGRAM
HILFE	HELP
SOLO HEISSLUFT 1 EBENE	SOLO HOT AIR 1 LEVEL
O/U HITZE	T/B HEAT
MULTI HEISSLUFT 2 EBENEN	MULTI HOT AIR 2 LEVELS
DAUER	DURATION
ZURÜCK	BACK
ENDE	END
ÜBERNAHME	ADOPT
HEISSLUFT	HOT AIR
INFRABRATEN	INFRAROAST
REINIGUNG	CLEANING
TABELLE	TABLE
WAS IST WENN?	WHAT IF?
INFO	INFO
FORMEN	TINS
HALBHOCH	SEMI-HEIGHT
BACKBLECH	BAKING SHEET
BIENENSTICH	BEE STING CAKE
BISKUITROLLE	SPONGE ROLL
BROT	BREAD
BUTTERKUCHEN	BUTTER CAKE
CHRISTSTOLLEN	CHRISTMAS STOLLEN CAKE
SOLO HEISSLUFT DRITTEBENE	SOLO HOT AIR THIRD LEVEL
VORHEIZEN	PRE-HEATING

ZEIT	TIME
LAUFZEIT	RUN TIME
EMPF. ZEIT	RECOMM. TIME

19 BUNDESREPUBLIK  
DEUTSCHLAND



DEUTSCHES  
PATENT- UND  
MARKENAMT

17 Patentschrift  
18 DE 198 32 757 C 2

21 Aktenzeichen: 198 32 757.9-34  
22 Anmeldetag: 23. 7. 1998  
23 Offenlegungstag: 17. 6. 1999  
24 Veröffentlichungstag der Patenterteilung: 2. 10. 2002

19 Int. Cl.<sup>7</sup>:  
**F 24 C 7/08**  
G 09 F 9/30  
D 06 F 33/02  
G 05 B 19/02  
A 47 L 15/46  
F 24 C 15/00

Innerhalb von 3 Monaten nach Veröffentlichung der Erteilung kann Einspruch erhoben werden

50 Innere Priorität:  
197 31 511.9 22. 07. 1997  
51 Patentinhaber:  
AEG Hausgeräte GmbH, 90429 Nürnberg, DE  
52 Vertreter:  
Matschur Lindner Blaumeier Patent- und  
Rechtsanwälte, 90402 Nürnberg

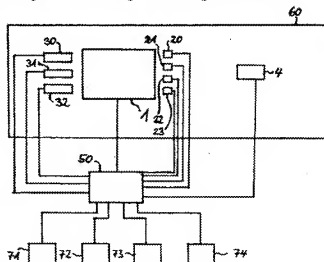
53 Teil in: 198 61 219.2

54 Erfinder:  
Leikam, Jürgen, 91161 Hilpoltstein, DE; Madloch,  
Volker, 90455 Nürnberg, DE; Kümmel, Egon, 91189  
Rohr, DE; Turek, Richard, 90765 Fürth, DE

55 Für die Beurteilung der Patentfähigkeit in Betracht  
gezogene Druckschriften:  
US 54 38 180 A  
US 49 14 277  
EP 07 40 112 A1

56 Verfahren zum Steuern eines Gargerätes, einer Waschmaschine oder einer Geschirrspülmaschine und  
Gerätes, Waschmaschine oder Geschirrspülmaschine mit grafischer Anzeigeeinrichtung

57 Verfahren zum Steuern eines Gargerätes, einer Waschmaschine oder einer Geschirrspülmaschine, welches bzw. welche eine grafische Anzeigeeinrichtung, wenigstens ein der Anzeigeeinrichtung zugeordnetes Eingabe-Bedienelement sowie wenigstens zwei Funktions-Bedienelemente zum Auswählen von jeweils zugeordneten Gar- bzw. Wasch- bzw. Spülfunktionen des Gargerätes bzw. der Waschmaschine bzw. der Geschirrspülmaschine aufweist, bei dem nach Auswählen einer Gar- bzw. Wasch- bzw. Spülfunktion durch Betätigen eines der Funktions-Bedienelemente  
a) ein zur ausgewählten Gar- bzw. Wasch- bzw. Spülfunktion gehörendes Gar- bzw. Wasch- bzw. Spülprogramm mit gespeicherten Programmparametern gestartet wird und zugleich  
b) für eine vorbestimmte Zeitdauer die aktuellen Programmparameter des Gar- bzw. Wasch- bzw. Spülprogramms auf jeweils einem Anzeigefeld der Anzeigeeinrichtung angezeigt werden sowie das oder die Eingabe-Bedienelemente derart aktiviert werden, daß wenigstens einer der Programmparameter durch Betätigen wenigstens eines dem zugehörigen Anzeigefeld zugeordneten Eingabe-Bedienelements über eine Manuführung auf der Anzeigeeinrichtung veränderbar ist.



DE 198 32 757 C 2

DE 198 32 757 C 2

BEST AVAILABLE COPY

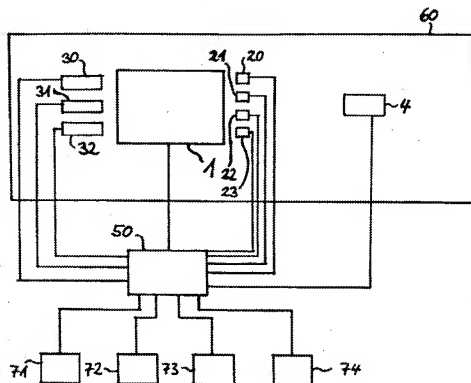
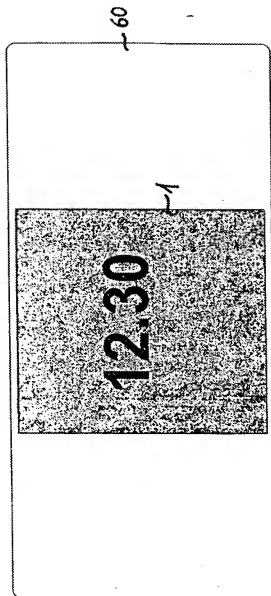


FIG 1

BEST AVAILABLE COPY

FIG 2



BEST AVAILABLE COPY

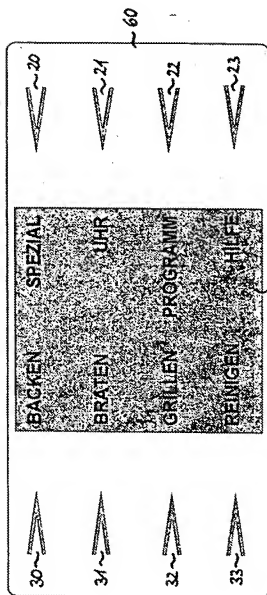
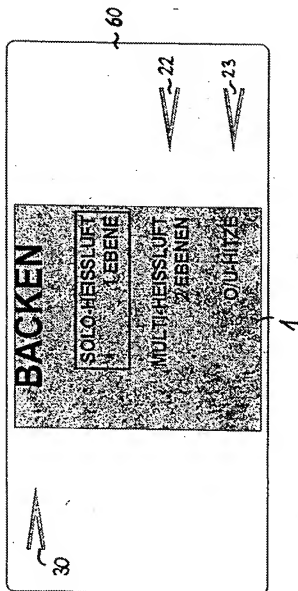


FIG 3

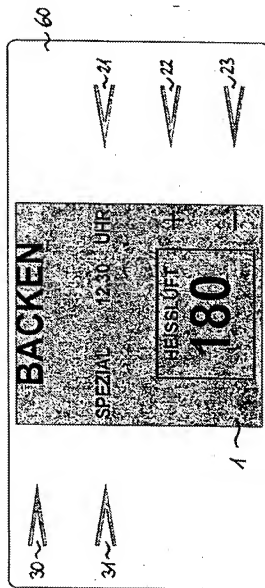
BEST AVAILABLE COPY

FIG 4



BEST AVAILABLE COPY

FIG 5





BEST AVAILABLE COPY

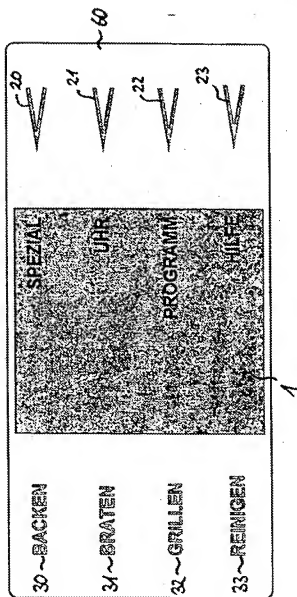
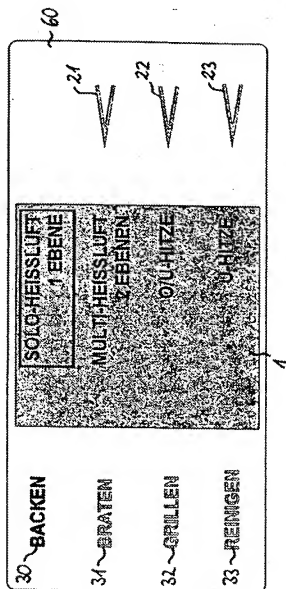


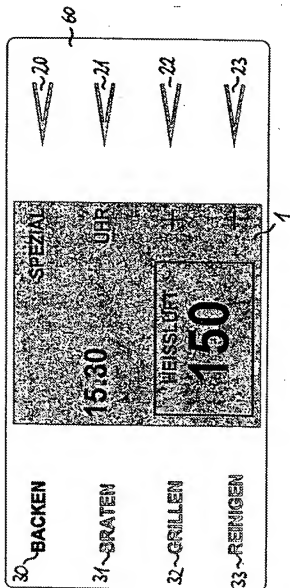
FIG 6

BEST AVAILABLE COPY

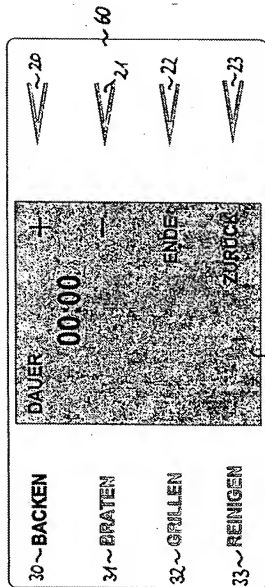


BEST AVAILABLE COPY

FIG 8



BEST AVAILABLE COPY



BEST AVAILABLE COPY

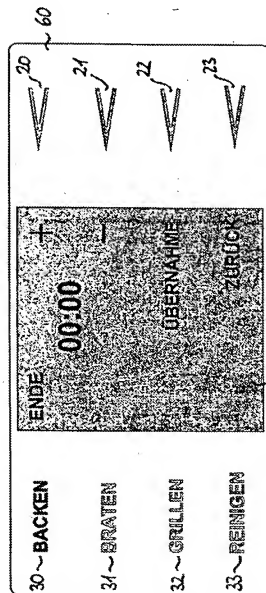


FIG 10

BEST AVAILABLE COPY

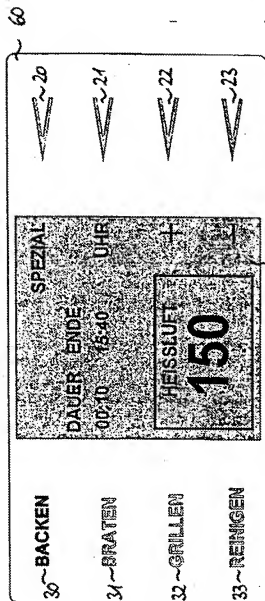
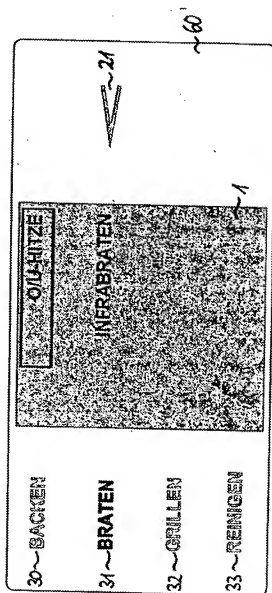


FIG 11

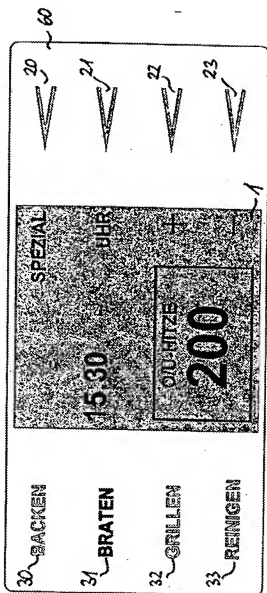
BEST AVAILABLE COPY

FIG 12



BEST AVAILABLE COPY

FIG 13





BEST AVAILABLE COPY

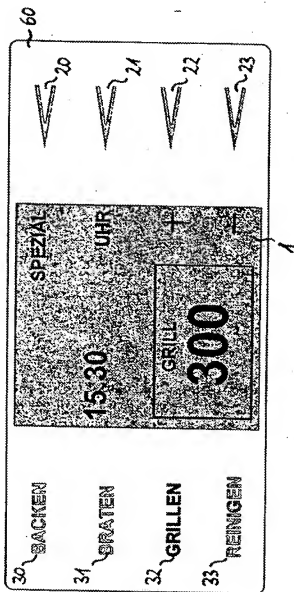
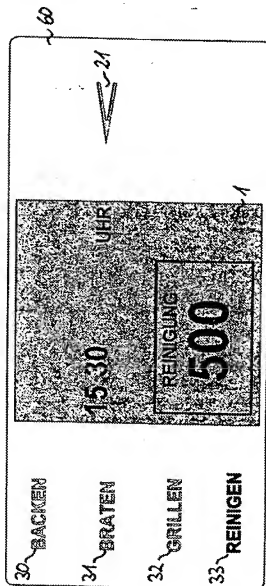


FIG 14

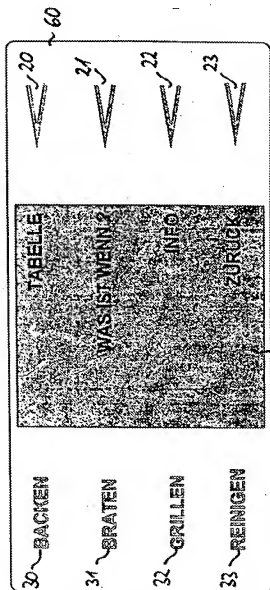
BEST AVAILABLE COPY

FIG 15



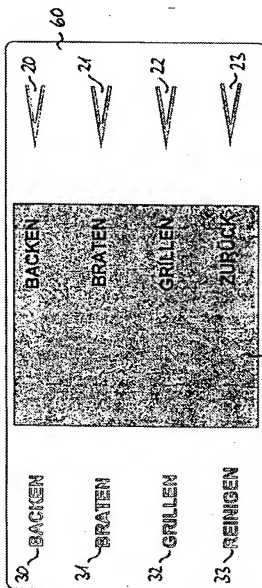
BEST AVAILABLE COPY

FIG 16



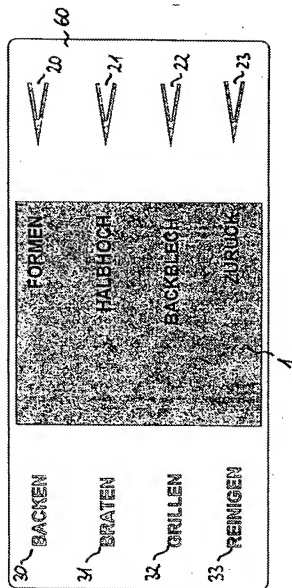
BEST AVAILABLE COPY

FIG 17



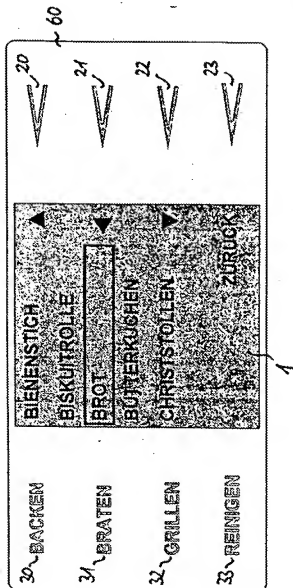
BEST AVAILABLE COPY

FIG 18



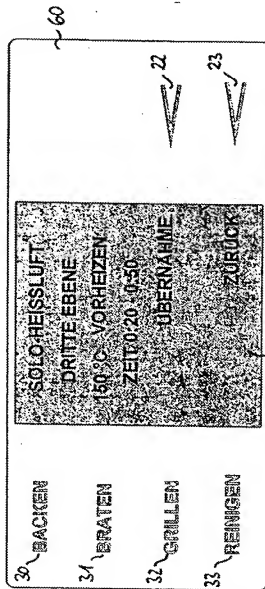
BEST AVAILABLE COPY

FIG 19



BEST AVAILABLE COPY

FIG 20



BEST AVAILABLE COPY

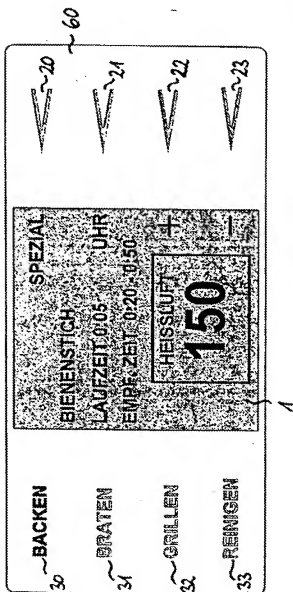


FIG 21